

claimed and teaches processing that would result in an inherent structure meeting the claimed low angle boundary rate percentage. Similar positions are taken with respect to independent claims 2, 10, and 11.

Applicant respectfully traverses the rejection of the claims on the grounds that the inherency position of the Examiner is flawed and cannot support the allegation of obviousness.

Critical to the rejection and allegation of inherency is the reliance on the processing of Economy wherein a solution treating at 1204 °C is disclosed and a following annealing step for the precipitation of carbides at 1149 °C is taught. The Examiner contends that this heat treatment produces the claimed low angle boundary rate conditions.

The problem with this approach is that it fails to take into account the effect of rolling. It is submitted that the claimed low angle boundary rate conditions are not met in Economy because Economy, while teaching a similar heat treatment, does not teach the critical rolling technique to attain the low angle boundary rate limitation.

In review, the claim calls for a low angle boundary rate of 4% or more. Moreover, the specification reveals that it is not only essential that the solution treatment occur at 900 °C or more, but that cold working must be done at a high rate of reduction.

Turning to the specification, two processes are disclosed in connection with the invention to achieve the claimed low angle boundary rate at issue.

The first process involves a cold working at a reduction rate of 60% or more, and then solution treatment at 900 °C or more. The second process has the cold working occurring at 40% or more and solution treatment is carried out at 900 °C and under the condition defined by the relationship  $R_d \times (0.1 + 1/\exp(T/500)) \geq 10$ , wherein  $R_d$  is the cold working amount.

Looking at Economy, lines 38-52 of col. 3, a process is disclosed that does not parallel that which produces the claimed low angle boundary rate of 4%. In this process, the obtained ingot is soaked and hot forged, and then reheated and hot rolled. The hot rolled product is the subject to a solution treatment and cold rolling with a reduction rate of 40% and then a solution treatment at 1149 °C.

The ingot after melting and cooling is soaked at 1204-1260 °C for about two hours.

The forging reduces the ingot to a thickness of about one inch.

The forged part is reheated to about 1204 °C and hot rolled to a thickness of about ¼ inch.

The hot rolled product is annealed for one hour at 1149 °C followed by water quench.

Cold rolling then occurs wherein the ¼ inch product is reduced to a thickness of 0.15 inch or equivalent to a 40% reduction.

The cold rolled product is again annealed at 1149 °C and water quenched. The annealed and quenched product is machined into specimen

blanks approximately 3.25 inches in length, 0.5 inches in width, and 0.12 inch in thickness.

Prior to machining, a substantial number of the specimens are subjected to an additional heat treatment consisting of heat at 1250 °F for about two hours followed by air cooling. Thus, the samples were tested in the annealed and/or annealed plus heat treated (H.T.) conditions.

Comparing Economy to the inventive first process, Economy does not cold work at the required high reduction rate. Economy only cold works at 40% reduction rate. Lacking the 60% reduction rate step that is shown to produce the claimed low angle boundary rate, it cannot be said that the low angel boundary rate would be inherently present in the product of Economy. Applicant again points to Table 2 of the specification, where Alloy Nos. 13-16 show that a low rate of reduction does not produce the claimed low angle boundary rate, even if the solution treatment is at 900 °C or more.

Turning now to the second inventive process, the issue is whether the Economy process can be said to inherently meet the claim limitations using a cold reduction rate of only 40%. As pointed out above, the low angle boundary rate of 4% can only be achieved when using a cold reduction rate of 40% when the formula  $R_d \times (0.1 + 1/\exp(T/500)) \geq 10$  is met. The equation represents a relationship between temperature and cold working that must be obtained in order to attain the claimed low angle boundary rate. The question now becomes whether Economy could be said to practice

such a process to support the position of inherency. Using the 40% reduction rate and solution treating temperature of 1149 °C, Economy's process produces a value of 8.0 using the equation, which does not meet the minimum value of 10. In this regard, the Examiner's attention is directed to Table 2, Nos. 29-32, wherein alloys that had a 40% reduction rate did not have the claimed low angle boundary rate.

From the analysis given above, it is clear that the process of Economy is not the same as that used in the specification to produce the product with the advantageous low angle boundary rate of 4%. Lacking this similarity in processing, the inherency stance fails and the rejection based on Economy must be withdrawn.

Lacking a basis for inherency, the Examiner would have to have some other reasoning to contend that the low angle boundary rate is found in Economy. However, there is no other legitimate basis to contend that the limitations of claims 1, 2, 10, and 11 are obvious based on Economy. The only way the Examiner could make a further rejection based on 35 U.S.C. § 103(a) is to use the Applicant's invention as a teaching template. Since this practice is impermissible under current patent law, any such rejection could not be sustained on appeal.

In light of the above, the rejection based on Economy must be withdrawn.

Accordingly, the Examiner is respectfully requested to examine this application in light of this Amendment, and pass all pending claims onto issuance.

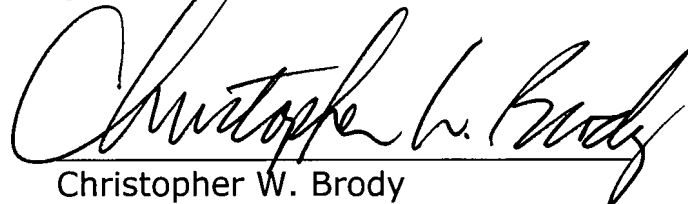
The above constitutes a complete response to all issues raised in the Office Action dated February 16, 2007.

If the Examiner believes that an interview would be helpful in expediting the allowance of this application, the Examiner is requested to telephone the undersigned at 202-835-1753.

Again, reconsideration and allowance of this application is respectfully requested.

Applicant respectfully submits that there is no fee required for this submission, however, please charge any fee deficiency or credit any overpayment to Deposit Account No. 50-1088.

Respectfully submitted,  
CLARK & BRODY

A handwritten signature in cursive script, reading "Christopher W. Brody". The signature is written in black ink and is positioned above a horizontal line.

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Docket No.: 12054-0022  
Date: April 27, 2007